## REMARKS

Claims 1-29 are currently pending in the subject application, and are presently under consideration. Claims 1-9 and 18-27 are allowed. Claims 10-17, 28, and 29 are rejected. Claim 10 has been amended for clarity, and it is respectfully submitted that the amendment to claim 10 does not further limit claim 10 in any manner. New claims 30-33 have been added. Favorable reconsideration of the application is requested in view of the amendments and comments herein.

### I. Rejection of Claims 10 and 28 Under 35 U.S.C. §103(a)

Claims 10 and 28 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,236,687 to Caso ("Caso") in view of U.S. Publication No. 2004/0105516 to Smith, et al. ("Smith") and further in view of U.S. Patent No. 5,151,919 to Dent ("Dent"). Claim 10 has been amended. Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claim 10 recites a plurality of phase locked loops, each having a first block decoder configured to decode bursts of the input modulated signal at a decode rate to generate a set of associated codewords and a phase/frequency error estimate. The Office Action dated January 18, 2006 (hereinafter "Office Action") asserts that Caso discloses a demodulator unit comprising a phase locked loop having a first block decoder configured to decode bursts of an input modulated signal at a decode rate to generate a set of associated codewords and a phase/frequency error estimate (Office Action, pages 2-3; citing Caso, col. 3, ll. 23-35 and col. 4, ll. 9-17). Representative for Applicant respectfully disagrees with this assertion. Furthermore, it is respectfully submitted that, in a Response filed October 17, 2005, to the Office Action dated September 15, 2005, Representative for Applicant provided arguments in response to the above assertion. These arguments were not addressed in the Office Action, and as such, these arguments have been repeated below.

Caso teaches a decision-directed phase-locked loop (DD-PLL) that receives an input signal, the input signal being encoded by a sequence of codewords (Caso, col. 3, ll. 23-26). The DD-PLL of Caso includes a comparator which generates a phase difference of an incoming

phase of an input modulated signal and an estimated phase (Caso, col. 3, ll. 28-30). The DD-PLL taught by Caso does not generate a set of associated codewords, as recited in claim 10, because the input signal to the DD-PLL is already encoded by a sequence of codewords. Additionally, the DD-PLL taught by Caso does not generate a phase/frequency error estimate, as recited in claim 10, but merely provides a phase estimate of a PSK modulated quadrature pair (see, *e.g.*, Caso, Abstract; col. 12, ll. 54-67, particularly col. 12, ll. 62-64). Accordingly, Caso does not teach or suggest a phase locked loop having a first block decoder configured to decode bursts of an input modulated signal at a decode rate to generate a set of associated codewords and a phase/frequency error estimate, as recited in claim 10.

Claim 10 also recites that one of said plurality of phase locked loops is adapted to selectively apply excess processing power to a burst of said input modulated signal. The Examiner relies on Smith to teach this element of claim 10 (Office Action, page 3). Representative for Applicant respectfully disagrees. Smith teaches a plurality of PLLs that provide mutual cross-connection comparison feedback signals to provide a more robust reception of digital data signals (Smith, Abstract). The PLLs include composite phase-frequency detectors that measure phase and frequency error in each loop and provide a corrective signal to compensate via a voltage controlled oscillator associated with each loop (Smith, page 6 paragraph 61). Thus, Smith is directed to a more efficient PLL system based on multiple feedbacks from each PLL to the other of the PLLs. However, Smith does not teach or suggest that any one of the plurality of PLLs provides excess processing power to a given input signal. In other words, Smith does not provide a teaching or suggestion that any of the plurality of PLLs processes a given input signal differently (*i.e.*, with excess processing power) than the remaining PLLs. Accordingly, Smith does not teach or suggest that one of said plurality of phase locked loops is adapted to selectively apply excess processing power to a burst of said input modulated signal, as recited in claim 10.

Claim 10 further recites a selection circuit which identifies the burst of said input modulated signal to be demodulated with excess processing power, said selection circuit providing said identified burst to said one of said plurality of phase locked loops which is

adapted to selectively apply excess processing power in order to re-process said burst of said input modulated signal. The Office Action relies on Dent to teach this element of claim 10 by stating that Dent "discloses a selector (sorter 122) which identifies a burst of said input modulated signal to be demodulated with excess processing (strongest signal) power, said selection circuit providing said identified burst to said one of said phase locked loops which is adapted to selectively apply excess processing power in order to re-process said burst of said input modulated signal," (Office Action, page 4; citing Dent, col. 7, ll. 30-60). Representative for Applicant respectfully disagrees.

Dent teaches a sorter that compares average signal strength of a number of local codes of a decoded signal and sorts the local codes from strongest to weakest average signal strength (Dent, col. 7, ll. 34-41). The sorter then transmits the strongest signal to the local code generator to be demodulated first (Dent, col. 7, ll. 41-45). Signal strength is defined in Dent as a measure of signal-to-noise ratio (S/N) (Dent, col. 2, ll. 45-54). Dent further teaches that the sequence of demodulation and extraction of individual information signals is in the order of highest signal strength to lowest signal strength because weaker signals are less likely to interfere with stronger signals (Dent, col. 8, ll. 57-65). Thus, interference caused by the presence of the strongest information signal in the composite signal during the decoding of weaker signals is removed, resulting in accurate decoding of the weak signals (Dent, col. 3, ll. 5-10). Representative for Applicant respectfully submits that selection of a strongest signal from a group of signals to be demodulated first to reduce interference is not applicable to applying excess processing power in order to re-process a burst of an input modulated signal, as recited in claim 10. The strongest signal, as taught by Dent, is selected because it is the strongest signal (*i.e.*, highest S/N), and as such is less likely to contain interference. Therefore, as taught by Dent, the strongest signal does not need to have excess processing power applied to re-process the signal, as the signal is already the strongest signal and is the least likely to have bit errors associated with decoding. As such, the strongest signal taught by Dent and the selected signal for application of excess processing power, as recited in claim 10, are unrelated concepts.

In addition, Dent further fails to teach that any of the decoded signals, weak or strong, are processed with *excess* processing power. Dent merely teaches that the signals are processed in descending order of signal strength to reduce interference, but fails to provide a teaching that the signals are processed differently from one another (*i.e.*, with excess processing power, as recited in claim 10). Furthermore, Dent also fails to teach that any of the individual signals, weak or strong, are re-processed. Dent teaches that the composite signal is reprocessed (see, *e.g.*, Dent, col. 10, ll. 50-54), but does not teach that a burst of an input modulated signal is reprocessed, as recited in claim 10. Accordingly, Dent does not teach or suggest a selection circuit providing an identified burst to one of a plurality of phase locked loops which is adapted to selectively apply excess processing power in order to re-process the burst of the input modulated signal, as recited in claim 10. Furthermore, due to the above described distinctions of the teachings of Dent and the recitations of claim 10, it is respectfully submitted that there is no motivation for one skilled in the art to combine the teachings of Dent with the teachings of Caso and Smith to achieve the invention of claim 10.

For all of the reasons stated above, Caso, Smith, and Dent, individually or in combination, fail to teach or suggest claim 10. Withdrawal of the rejection of claim 10, as well as claims 11-17, 28, and 29 is respectfully requested.

Claim 28 recites that the first block decoder of said one of said plurality of phase locked loops is configured to decode a set of vector pairs of the burst of said input modulated signal at a decode rate to generate the set of associated codewords and the phase/frequency error estimate. It is respectfully submitted that the Office Action rejection of claim 28 is deficient as the Office Action fails to address the language of claim 28. Specifically, the Office Action fails to provide the relevant teachings of the prior art relied upon over the language of claim 28, as stipulated in MPEP 706.02(j). Representative for Applicant respectfully submits that the cited prior art, individually or in combination, fails to teach or suggest claim 28. Withdrawal of the rejection of claim 28 is respectfully requested.

For the reasons described above, claims 10 and 28 should be patentable over the cited art. Accordingly, withdrawal of this rejection is respectfully requested.

## II. Rejection of Claims 11-17 and 29 Under 35 U.S.C. §103(a)

Claims 11-17 and 29 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Caso in view of Smith and Dent, and further in view of U.S. Patent No. 5,983,385 to Khayrallah, et al. ("Khayrallah"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claims 11-17 and 29 depend from claim 10. For the reasons described above, claim 10 is patentable over Caso in view of Smith and Dent. The addition of Khayrallah does not cure the deficiencies of Caso, Smith, and Dent to teach or suggest the elements of claim 10, from which claims 11-17 and 29 depend. Accordingly, claims 11-17 and 29 should also be patentable over the cited art. Withdrawal of the rejection of claims 11-17 and 29 is respectfully requested.

## III. New Claims 30-33

New claim 30 depends from claim 10 and recites that each of said plurality of phase locked loops is configured to calculate a phase estimate of the bursts of the input modulated signal using a unique combination of frequency and initial phase estimates. None of the cited art teaches or suggests new claim 30. Consideration and allowance of new claim 30 is respectfully requested.

New claim 31 depends from new claim 30 and recites that a quantity of said plurality of phase locked loops is equal to a quantity of possible unique combinations of frequency and initial phase estimates. None of the cited art teaches or suggests new claim 31. Consideration and allowance of new claim 31 is respectfully requested.

New claim 32 depends from new claim 10 and recites that each of said plurality of phase locked loops are configured to process the bursts of the input modulated signal serially. None of the cited art teaches or suggests new claim 32. Consideration and allowance of new claim 32 is respectfully requested.

New claim 33 depends from new claim 10 and recites that each of said plurality of phase locked loops comprises a second decoder, and wherein the selection circuit determines the burst to be re-processed with excess processing power based on a likelihood of phase estimation

failure based on the output of the second decoder of each of said plurality of phase locked loops. None of the cited art teaches or suggests new claim 33. Consideration and allowance of new claim 33 is respectfully requested.

## CONCLUSION

In view of the foregoing remarks, Applicant respectfully submits that the present application is in condition for allowance. Applicant respectfully requests reconsideration of this application and that the application be passed to issue.

Please charge any deficiency or credit any overpayment in the fees for this amendment to our Deposit Account No. 20-0090.

Respectfully submitted,

Date 4/17/06

Christopher P. Harris
Registration No. 43,660

CUSTOMER NO.: 26,294

TAROLLI, SUNDHEIM, COVELL, & TUMMINO L.L.P.
526 SUPERIOR AVENUE, SUITE 1111
CLEVELAND, OHIO 44114-1400
Phone: (216) 621-2234
Fax: (216) 621-4072